

line 5, change "such that the" to --wherein--;

line 13, insert --of said rotor-- after "bobbin";

line 17, change "such that" to --wherein--; and

line 19, change "the" to --a--.

REMARKS

Claims 1-3 are all the claims pending in the application.

PRIOR ART REJECTIONS

Rotors for automotive alternators rotate at high-speeds. Thus, when radial irregularities of a multi-layered portion in an axial direction of a bobbin of the rotor occur, vibrations of the rotor, during the high-speed rotation, increase, thereby causing bending of the rotating shaft or disconnecting of field windings on the bobbin. Accordingly, the winding configuration of the rotor eliminates the eccentricities of the multi-layered portion in the direction of the bobbin, forms a uniform diameter of the multi-layered portion and obtains a balanced rotating member.

The rotor of the present application solves the above problems, eliminates the eccentricities in the multi-layered portion of the field winding, and reduces vibrations during high-speed rotation. As illustrated in Fig. 1 of the present application, a field winding 20 has, for example, a rectangular cross section, wherein opposite flat surfaces are parallel. Portions of the wire in the second layer are positioned in the exact center between the adjacent portions of the wire in the first layer (Fig. 3, first configuration), the wire in the first layer and the wire in the second layer radially overlap each other across the entire region in the axial direction (Fig. 2, second configuration), or shifting from the first (second) configuration to the second (first) configuration. Since the field winding 20 has a rectangular cross-section, the field winding 20 is

wound with the radially “inner circumferential side” of the winding in the second layer in surface contact with the radially “outer circumferential side” of the winding in the first layer. Thus, the rotor of the present application increases space factor, output and rigidity, and reduces electromagnetic noise.

The Examiner has rejected claim 1 under § 103(a) over APA in view of Benford.

Applicant traverses this rejection for the following reasons.

Benford is directed to an electric motor that includes a magnetic flux return path 26 for minimizing losses due to eddy currents or hysteresis (column 3, lines 41-45). The magnetic flux return path 26 contains discrete windings of magnetic material wire 24 wound in a direction that crosses the flow of the magnetic flux. To produce rotation of the output shaft 14 of the motor 10, as illustrated in Figure 1, a direct current is introduced into the field windings 24 of the stator 20 to generate a magnetic field which causes rotational movement of the rotor 12 and the permanent magnet pole pairs 18 (column 5, lines 1-5). Multiple layers of the magnetic material wire 24 of the stator 20 are wound in a first direction (layer 38), wherein each wire is oriented in a direction that crosses the flow of magnetic flux within the windings (arrows 36) (see, Fig. 4). The next layer 40 of magnetic material wire 24 is formed by winding the wire over the layer 38 in the opposite direction of layer 38 in a direction crossing the flow of magnetic flux 36.

Benford fails to teach or suggest Applicant’s winding configuration of the rotor. Benford teaches a high-density winding configuration of the stator. As described in column 5, line 2 (of Benford), the field windings 24 are wound on the stator 20. Conversely, the field windings of the claimed invention are “wound a predetermined number of turns into multiple layers on said cylindrical portion of said bobbin of said rotor.” Clearly, Benford’s winding configuration of the

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stator for the electric motor is not Applicant's winding configuration of the rotor for the automotive alternator. Therefore, claim 1 is patentable over Benford since Benford fails to teach or suggest the claimed field windings of the rotor.

Applicant submits that dependent claims 2 and 3 are patentable for the same reasons as mentioned above with respect to claim 1.

In view of the foregoing arguments above, Applicant submits that claims 1-3 are in condition for allowance. Therefore, Applicant respectfully requests the Examiner to withdraw the §103 rejections of claims 1-3.

Reconsideration and allowance of this application are now believed to be in order, and such action is hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, he is kindly requested to **call the undersigned** at the telephone number listed below.

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,



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